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Farming Terraced Land

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U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

Leaflet No. 335

FARMING TERRACED LAND

By Paul Jacobson and Walter Weiss, *zone conservationists, Soil Conservation Service*

Building a set of terraces does not in itself control erosion. Construction is only the beginning. How well terraces do the job they are meant to do depends on how they are farmed.

A great many terraces have been built on farm land in the United States during the last few years. Many more are needed. Terraces would probably be more widely used if farmers understood how easy it is to farm them when they are built right. Some of the early terraces were built with the ridges and channels too narrow. This made a definite obstruction to normal farming operations. Properly built terraces with broad ridges and channels are essential if farming operations are to be successfully and easily performed.

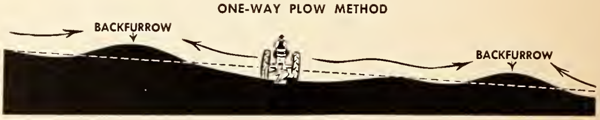
One way to make terraces easier to farm, particularly with row crops, is to build them parallel to each other. This is not possible on all land that needs terracing. If you are planning to build terraces, you may want to check with the Soil Conservation Service technician assigned to your soil conservation district to see if parallel terraces can be constructed on your land.

PLOWING TERRACED LAND WITH THE TWO-WAY PLOW

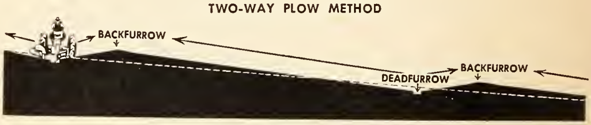
Research and observation indicate that plowing with the conventional one-way plow, over a period of years, will eventually bench a terraced field. In using the one-way plow you are continually leaving deadfurrows in the area between terraces and placing backfurrows on the terrace ridge. Because the soil removed from between terraces cannot be replaced, the profile between terraces eventually becomes hollowed out and a benched effect develops on the field. This will eventually make it necessary to blade-in the terraces and move their location by half a spacing if all the field is to remain farmable.

You can overcome this difficulty by using the two-way plow. With it, the deadfurrow is in the terrace channel, where the removed soil is largely replaced by the small amount of erosion that occurs between terraces. Thus, by using the two-way plow you maintain constant profile between terraces and no benching results.

Farmers who plan to farm terraces should give serious thought to this problem. If you need a new plow it might be wise to get the two-way plow.



If you use a one-way plow the profile becomes dished and after several plowings the terraces become benched. The arrows show the direction the dirt is thrown, the dotted line the natural ground level.



By using a two-way plow the profile remains almost constant. The arrows show the direction the dirt is thrown, the dotted line the natural ground level.

HOW TO USE THE TWO-WAY PLOW

Step 1 in this method of plowing is to throw the first furrow up on the ridge of the top terrace from the backslope side. Then plow the area below the top terrace by turning all the furrows uphill.

When you are within 15 to 20 feet of the channel of the next terrace, at the narrowest place, start to plow out the wide areas, leaving an area of unplowed land of even width through the field (Step 2).

After all the wide areas are plowed, a land 15 to 20 feet wide will be left above the terrace channel. Plow this out by turning the furrows uphill (Step 3).

The last step (Step 4) consists of plowing the area between the top of the ridge and the low point of the channel. To do this, throw the first furrow toward the top of the ridge and continue throwing furrows in the same direction until this land is plowed out.

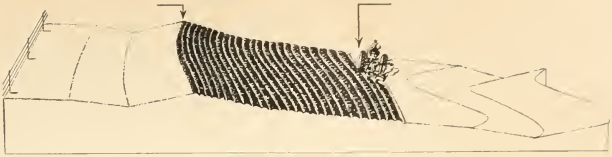
This method will leave one deadfurrow in the bottom of the terrace channel, and one backfurrow on the ridge.

After plowing the area between the first and second terraces, plow the area above the first terrace and the area between other terraces, using the same sequence.

After several plowings, using a two-way plow, the ridge may become too high. You can prevent this and at the same time broaden the terrace by leaving the backfurrow to one side or the other of the extreme peak.

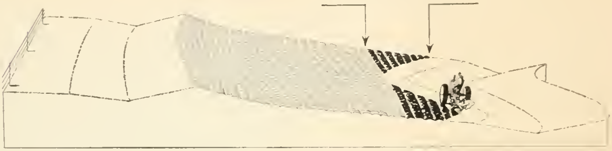
STEP NO. 1

PLOW AREA BETWEEN TERRACES



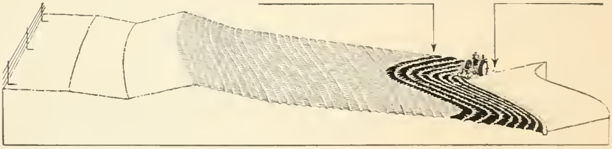
STEP NO. 2

PLOW OUT WIDE AREAS



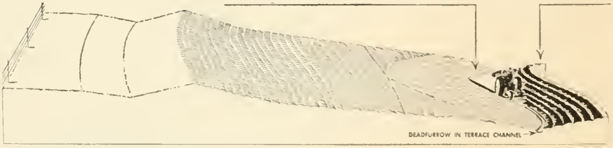
STEP NO. 3

PLOW REMAINING LAND ABOVE TERRACE CHANNEL



STEP NO. 4

THROW REMAINING FURROWS TOWARD TERRACE RIDGE



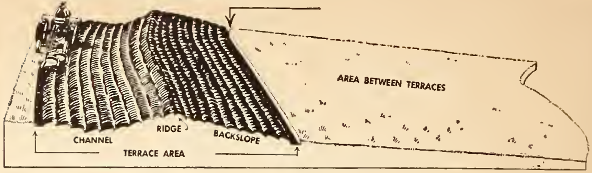
The two-way plow has two sets of moldboards. This permits throwing the dirt either to the right or to the left.

HOW TO USE THE CONVENTIONAL ONE-WAY PLOW

Method 1— Deadfurrow Between Terraces

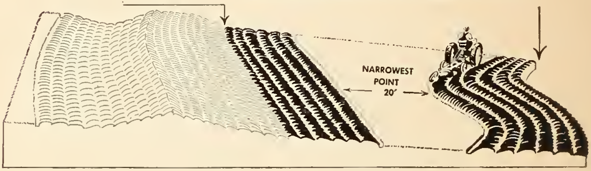
STEP NO. 1

BACKFURROW ON CENTER OF RIDGE
PLOW OUT TO EDGE OF TERRACE AREA



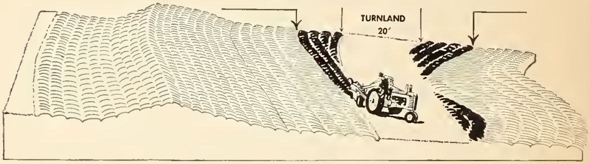
STEP NO. 2

PLOW AROUND AREA BETWEEN TERRACES UNTIL
UNPLOWED SECTION IS 20′ AT NARROWEST POINT



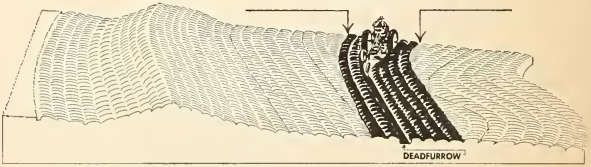
STEP NO. 3

FOLLOW EXISTING FURROWS AND TRIM
TURNLAND DOWN TO UNIFORM WIDTH



STEP NO. 4

PLOW AROUND TURNLAND AND
LEAVE DEADFURROW IN CENTER



The first step in this method is to backfurrow to each terrace ridge. It does not matter which terrace you start with. If the terrace has lost some of its height, throw the furrows together at the top just as you would start on a land anywhere. If the terrace ridge is already high enough keep the plow below the ridge so that the disturbed soil from the first round just meets at the top. This helps to broaden the top of the terrace and makes it easier to farm.

Continue plowing on the land started with the backfurrow until you have plowed an area about 40 feet wide, 20 feet above and 20 feet below the terrace ridge. Do this on each terrace, then plow the remaining areas between the terraces as separate lands.

Continue to plow these lands until the unplowed strip narrows down to about 20 feet wide at the narrowest part (Step 2). This unplowed area will be irregular in width.

Now plow extra furrows on the wide parts of the remaining area, until you have a turnland 20 feet wide extending the entire length of the field (Step 3). This permits you to plow out irregular areas without turning on plowed ground.

Plowing this uniform-width turnland as a regular land will then leave the deadfurrow about halfway between terraces (Step 4). The turnland can be narrower than 20 feet if you are using small equipment; it should probably be wider if you are using a tractor and large plow.

After studying the diagrams you may find that you are already using this system in plowing your terraces. If you have been turning on plowed ground rather than using the turnland, you may want to try this easier method. With the method of plowing as illustrated here, you always throw the furrow into the terrace channel and leave the deadfurrow in the same place every time you plow. Since that is not desirable you should alternate this method of plowing with the method described on the next page.

Method 2—
Deadfurrow in Terrace Channel

Every other time you plow the terraced area, throw the furrow away from, rather than into, the terrace channel. Do this by backfurrowing from the terrace ridge to the center of the terrace channel on each terrace (Step 1).

Then move up the slope 15 to 20 feet from the terrace channel and start another backfurrow parallel to the terrace channel (Step 2). The first time you try it, you may want to set a line of stakes but after a little experience you can follow the line by eye.

Continue to backfurrow this land until you reach the deadfurrow in the terrace channel. The deadfurrow formed there materially increases the capacity of the terrace.

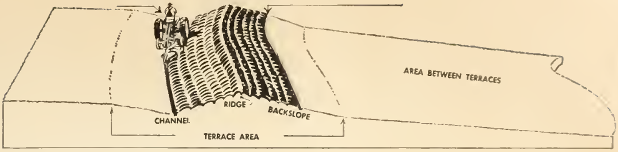
You now have an unplowed area below each terrace that can be plowed as outlined in method 1 on the previous page. You simply work the remaining land down to an even-width strip and plow out as illustrated on the right (in Steps 3, 4, and 5). Follow the same procedure on all the terraces.

It is important to see that the deadfurrow falls in a different place each time the field is plowed. The easiest and best way to do this is by alternating plowing methods 1 and 2 and by varying the width of the plowed strip between the terraces. Plowing according to method 2 throws the furrows out of the terrace channel.

Always plow out point or irregular areas before plowing all of the long ones. This gives you solid or undisturbed ground to turn on, resulting in less wear and tear on equipment.

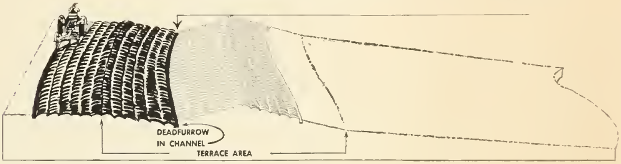
STEP NO. 1

BACKFURROW FROM TERRACE RIDGE OUT TO CENTER OF TERRACE CHANNEL



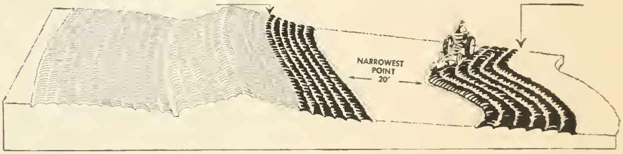
STEP NO. 2

START BACKFURROWING ABOVE TERRACE 15' TO 20' FROM THE CHANNEL DEADFURROW, CONTINUE UNTIL THE CHANNEL IS REACHED



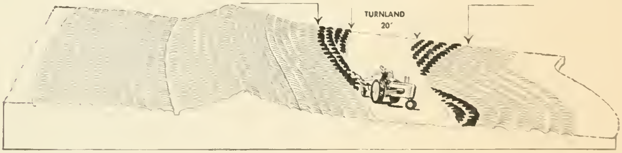
STEP NO. 3

PLOW AROUND AREA BETWEEN TERRACES UNTIL UNPLOWED SECTION IS 20' AT NARROWEST POINT



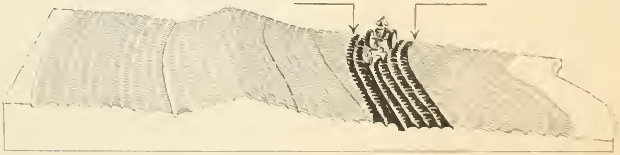
STEP NO. 4

FOLLOW EXISTING FURROWS . . . TRIM TURNLAND DOWN TO UNIFORM WIDTH



STEP NO. 5

PLOW OUT TURNLAND



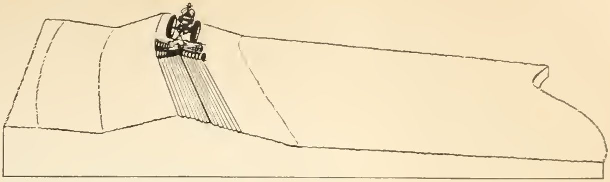
This man is plowing out the wide area above the terrace with a two-way plow, leaving a strip of even width.

Backfurrowing to the terrace ridge with the conventional one-way plow. The deadfurrow may be left either in the terrace channel or between the terraces.

USING OTHER TILLAGE IMPLEMENTS

When working terraced land for either row crops or grain, operate all cutting tools, such as disks, field cultivators, or spring-tooth harrows, on the contour. Use the terrace as the guideline for starting the operation, also in seeding grain either broadcast or with a drill. Where you put grain in without plowing, corn rows furnish a good guide for tillage and seeding operations.

OPERATE DISKS, CULTIVATORS, DRILLS, SPRING-TOOTH HARROWS, ETC., ON THE CONTOUR . . . USE TERRACES AS GUIDE LINES



Equipment should be used in such a way that the terrace is maintained. This harrow is doing a good job on the terrace backslope.

PLANTING ROW CROPS ON TERRACED LAND

Method 1

When planting row crops, such as corn, potatoes, or beans, start on the uphill side of the top terrace (Step 1). Do not straddle the terrace with the planter. Put the first row just off the terrace ridge on the uphill side. Continue planting to the top of the slope. Straddling the terrace ridge with the planter will cause trouble later in cultivating—the front shovels will be buried, while the rear ones dangle in the air.

After planting above the top terrace to the edge of the field, continue the planting by starting on the backslope of the top terrace and plant down the slope about one-third of the distance between the first and second terrace (Step 2).

Then go to the channel side of the ridge of the second terrace and plant up, just as with the first one, until a strip of land *eight rows wide at the narrowest part* is left unplanted (Step 3). This unplanted area will almost certainly be irregular in width.

Now plant extra (shorter) rows on the wide part of this unplanted area until you have the *eight-row* width of turnland extending the entire length of the field (Step 4). This lets you plant the irregular areas without turning on planted ground. This procedure is necessary when you plant with a lister.

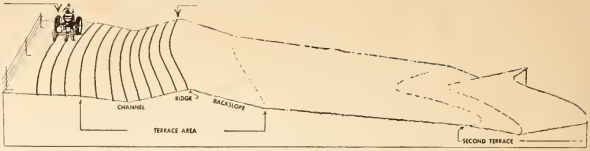
Plant the turnland last, giving you eight rows that go the entire length of the field (Step 5).

This width may vary, but eight rows are enough for either a two-row or a four-row planter.

Many prefer this method because no turning on planted ground is required and a better contour is maintained. In the fall you can harvest the eight turnland rows first and then disk them down. This leaves a turning area for harvesting the point rows.

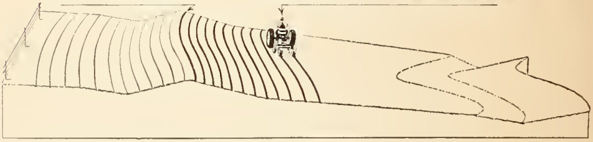
STEP NO. 1

START PLANTING NEAR TOP OF RIDGE
CONTINUE TO TOP OF SLOPE OR BOUNDARY



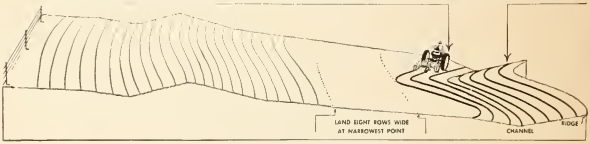
STEP NO. 2

CONTINUE PLANTING BY STARTING ON BACKSLOPE OF TOP TERRACE AND PLANT DOWN ABOUT ONE-THIRD OF DISTANCE BETWEEN FIRST AND SECOND TERRACES



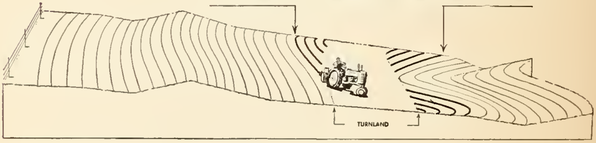
STEP NO. 3

START PLANTING NEAR THE TOP OF RIDGE OF SECOND TERRACE AND PLANT UP THE SLOPE OVER THE CHANNEL, UNTIL A LAND EIGHT ROWS WIDE AT NARROWEST POINT IS LEFT UNPLANTED



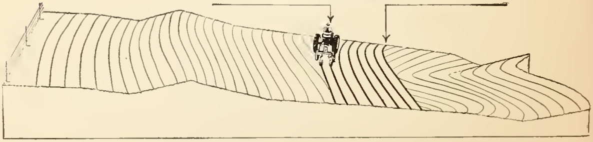
STEP NO. 4

PLANT SHORT ROWS ON WIDE PART OF THE TURNLAND UNTIL EIGHT-ROW TURNLAND EXTENDS LENGTH OF FIELD



STEP NO. 5

PLANT EIGHT-ROW TURNLAND LAST
EXTEND THROUGH ENTIRE FIELD LENGTH



Method 2

Again you start planting on the inside of the top terrace and continue to the top of the slope or field boundary (Step 1). But then plant on the channel side of the ridge of the second terrace. Plant uphill until a land eight rows wide at the narrowest part is left unplanted on the backslope of the next terrace above (Step 2).

The unplanted area will be irregular. Now you are ready to plant extra (shorter) rows on the wide portions of the unplanted area. This leaves an eight-row width of turnland extending the length of the field (Step 3.) Here again this permits you to plant the irregular areas without turning on planted ground.

Planting the turnland is the final operation. To do this, start near the top of the backslope of the top terrace and plant down eight rows (Step 4). The only difference between this method and method 1 is in the location of the turnland. In this method the eight-row turnland is left just below each terrace instead of halfway between terraces.

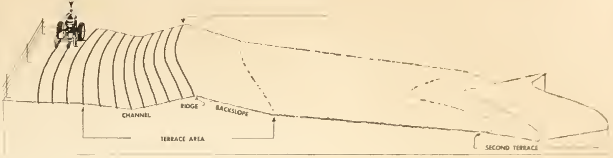
Many farmers prefer this method because:

1. It can be carried out without turning the equipment on planted ground. This is important if you plant corn with a lister.
2. Many farmers find this method of planting easier to explain to hired men.
3. With the eight-row turnland area on the backslope of the terrace, it is easier to be sure at harvesting time that you will start on rows that extend the whole length of the field.

In both methods, establishing the eight-row turnland is easily done by eye after you have had a little experience. Here, as in plowing, you may wish to set two lines of stakes the first time you try it—one line in the upper side and the other on the lower side of turnland. With added experience this will not be necessary.

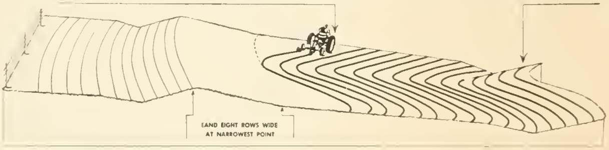
STEP NO. 1

START PLANTING NEAR TOP OF RIDGE
CONTINUE TO TOP OF SLOPE OR BOUNDARY



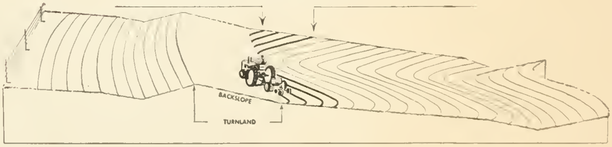
STEP NO. 2

START PLANTING NEAR THE TOP OF RIDGE OF SECOND TERRACE AND PLANT UP THE SLOPE OVER CHANNEL, UNTIL A LAND EIGHT ROWS WIDE AT NARROWEST POINT IS LEFT UNPLANTED



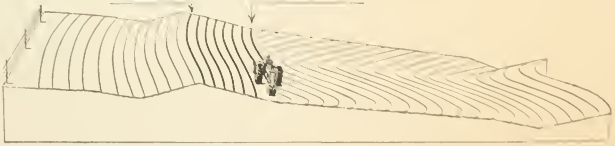
STEP NO. 3

PLANT SHORT ROWS ON WIDE PART OF TURNLAND
UNTIL EIGHT-ROW TURNLAND EXTENDS LENGTH OF FIELD



STEP NO. 4

START NEAR TOP OF BACKSLOPE OF TOP
TERRACE AND PLANT DOWN EIGHT ROWS



Method 3

A third way to put in row crops is to start planting on the inside slope of the top terrace and plant to the top of the slope or field boundary just as in the other methods (Step 1). Then start on the backslope (Step 2) of the top terrace and plant down to a point about one-half the distance to the second terrace.

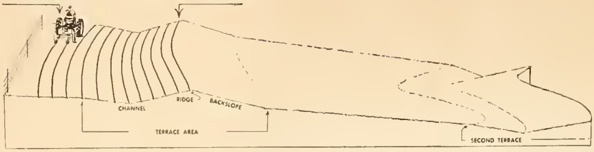
Next (Step 3) start planting near the top of the *inside* slope of the second terrace, planting uphill until you reach the rows already planted. This will leave point rows near the center between terraces. The point rows can be planted either from one side (Step 3) or from both sides of the uneven area. Planting will then end in the center of the area. This method may be preferred by those who plan to harvest corn with a pull-type picker.

Continue this procedure with the remaining terraces. Use the last terrace as a guideline to plant to the bottom of the field.

Where listing is done, this method is not recommended because of turning on planted ground.

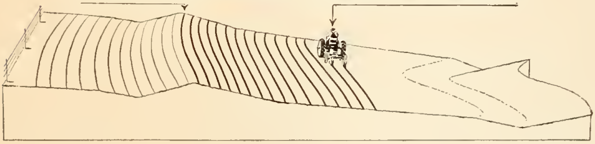
STEP NO. 1

START PLANTING NEAR TOP OF RIDGE
CONTINUE TO TOP OF SLOPE OR BOUNDARY



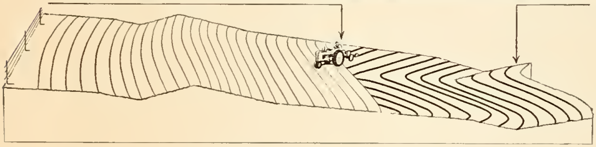
STEP NO. 2

CONTINUE PLANTING BY STARTING ON BACKSLOPE OF TOP TERRACE AND PLANT DOWN ABOUT HALF OF DISTANCE BETWEEN FIRST AND SECOND TERRACES



STEP NO. 3

START PLANTING NEAR TOP OF RIDGE OF SECOND TERRACE AND PLANT UP THE SLOPE OVER CHANNEL, TO PLANTED ROWS, LEAVING POINT ROWS IN BETWEEN TERRACES

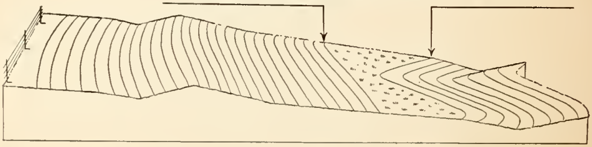


Method 4

Another possible method is identical with method 3, except that you leave the uneven area near the center between terraces in sod crops. A temporary crop that can be harvested for hay may be planted in the uneven area if you plow it with the rest of the area. This procedure will work all right, but it is very seldom used or recommended.

Note.—Avoid any method that puts point rows in the terrace channel.

KEEP AREA WHERE POINT ROWS WOULD OCCUR IN SOD CROPS
OR SEED TO GRAIN WHEN REST OF AREA IS IN ROW CROPS



A two-row corn planter working parallel to the terraces makes rows that are easy to farm.

HARVESTING CROPS ON TERRACED LAND

Close-Sown Crops

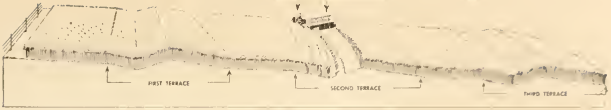
Grain and other close-sown crops, such as peas, soybeans, and flax, can either be harvested with a binder or a windrower or be cut direct with a combine. All of these operations present the same general problems.

On land that slopes 6 percent or less, the terraces can be built wide and can therefore be crossed with machinery at almost any angle. The easiest way to harvest on such terraces is simply to cut around the field, as you would if the terraces were not there.

On the steeper slopes, where terraces cannot be built wide, it is probably better to harvest the grain with the terraces. This will cause some waste where the tractor and bull wheel knock down the grain.

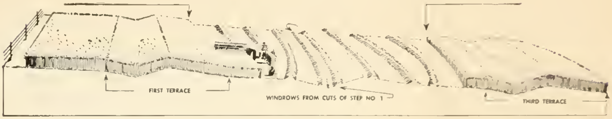
STEP NO. 1

OPEN LAND ON TOP OF SECOND TERRACE



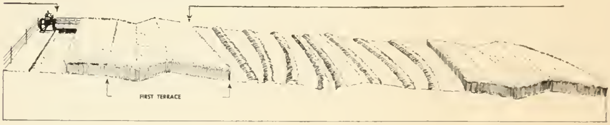
STEP NO. 2

CUT LAND UNTIL NEAR FIRST AND THIRD TERRACES



STEP NO. 3

CUT AROUND THE AREA LEFT ABOVE, AND INCLUDING, THE FIRST TERRACE



If terraces are nearly parallel it would be well to select one key terrace—usually the center terrace. Then open a land on this terrace. With a binder or combine, this simply means back cutting on the ridge of the terrace you select for the key terrace. With either a binder or a combine, it is best to put the grain wheel on the terrace ridge and then make a complete round.

If a windrower, which delivers the grain to the center, is available, the job is easy since only one back cut is necessary. It is probably better to make this cut with the grain wheel running on the top of the terrace ridge. When using an old converted binder for a windrower, the better plan is to cut a strip through the field on the key terrace with a mower and use it for hay, or put it into a windrow with a side-delivery rake after the first cut is made. Cut the rest of the terraces with the machine running parallel to the terraces. By planning ahead, you can make wide cuts on the areas that have a wide horizontal interval and narrow cuts on the narrow intervals. In this way, the cut will approach the next terrace with the cut being parallel.

On reasonably gentle slopes, harvesting equipment can work over the terraces with ease.

On steeper slopes it is best to work with the terraces.

HARVESTING CROPS ON TERRACED LAND

Row Crops

The method of picking row crops on terraced land depends largely on how you plant the field. It is the reverse, so to speak, of your planting procedure. Only one method is shown in detail—picking corn planted according to method 1 (p. 8). Others are very similar and all are the reverse of the planting process.

First, open up a land by picking the rows in the eight-row turnland. With a two-row mounted picker this is very simple. With other pickers you will have down rows to contend with.

Pick the short or point rows next (Step 2). You can pick them very easily by using the eight-row turnland as a place to turn your equipment.

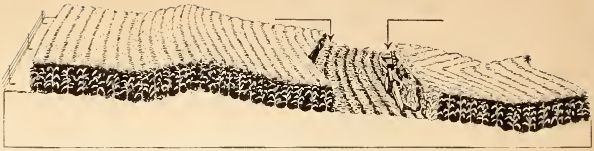
Next, as illustrated in Step 3, harvest all the long rows between the turnland and the second terrace. As in harvesting the short rows, the eight-row turnland furnishes a turnland for harvesting these rows.

Finally, harvest the rows up to and above the top terrace. Usually it is better to open a land in this area by picking around the area containing the long rows. This is illustrated in Step 4. After you harvest the long rows, any short rows left along the field boundary can be harvested as a land by working around the rest of the corn. Harvesting the long rows first gives you a turning area for picking the short rows.

Harvest the rest of the terraces as in Steps 1, 2, and 3. Harvest the area below the last terrace by lands as though it were an ordinary field. It is well here, as in picking out the top terrace, to pick the long rows first, so that you will have turnlands for harvesting the short rows.

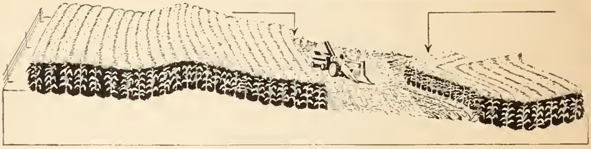
Some general suggestions on harvesting corn in terraced fields are:

1. To adapt picking to the various planting methods, study the charts for planting and use the reverse order.
2. On all methods of planting, harvest the long rows first. This leaves a good-sized area of picked corn to turn on in harvesting the short rows.
3. Where you use a mounted picker and pull the wagon behind the tractor, you will need wide sideboards to keep the corn from falling to the ground.
4. On a mounted-type picker, have a shutoff of the elevator for short curves.
5. You can follow the same steps for harvesting corn for silage as for picking corn.



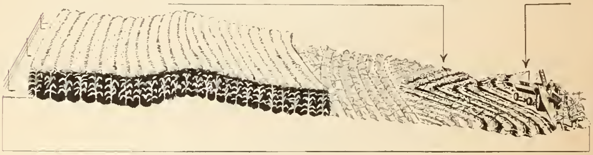
STEP NO. 1

PICK OUT TURNLAND FIRST



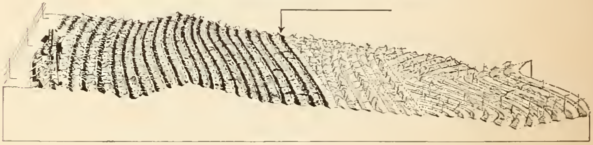
STEP NO. 2

PICK SHORT ROWS ON WIDE PART OF TURNLAND



STEP NO. 3

PICK CORN BETWEEN TURNLAND AND SECOND TERRACE RIDGE



STEP NO. 4

PICK ALL CORN ABOVE TURNLAND TO FIELD BOUNDARY

MAKING HAY ON TERRACED LAND

Techniques for cutting hay are similar to those for other close-sown crops. On land sloping up to about 6 percent, cut the hay just as though the field were not terraced. On steeper land it will probably be better to open up lands on the terraces and work each terrace as an individual unit.

A pull-type corn picker working successfully on the rows of a terraced field. →

A mounted picker may have slight advantage on curves; it leaves no down rows when opening up the field.

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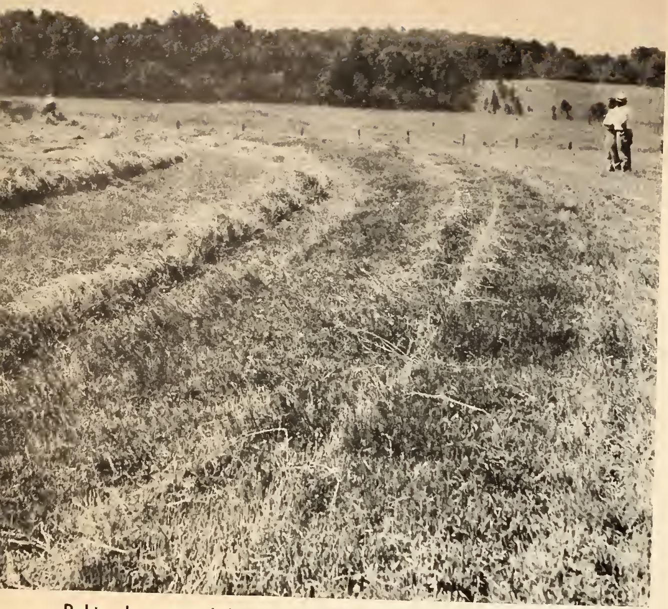
Using a side-delivery rake presents the most difficult problem. It is best to start by working the hay down from the top of the terrace ridge. This will leave one windrow in the bottom of the terrace channel and one on the back side of the ridge. Both are easily picked up with a hay loader. If you make and pick the short windrows when on the last long windrow you can avoid much excess driving in the field.



Raking hay toward the channel from the ridge with the side-delivery rake.

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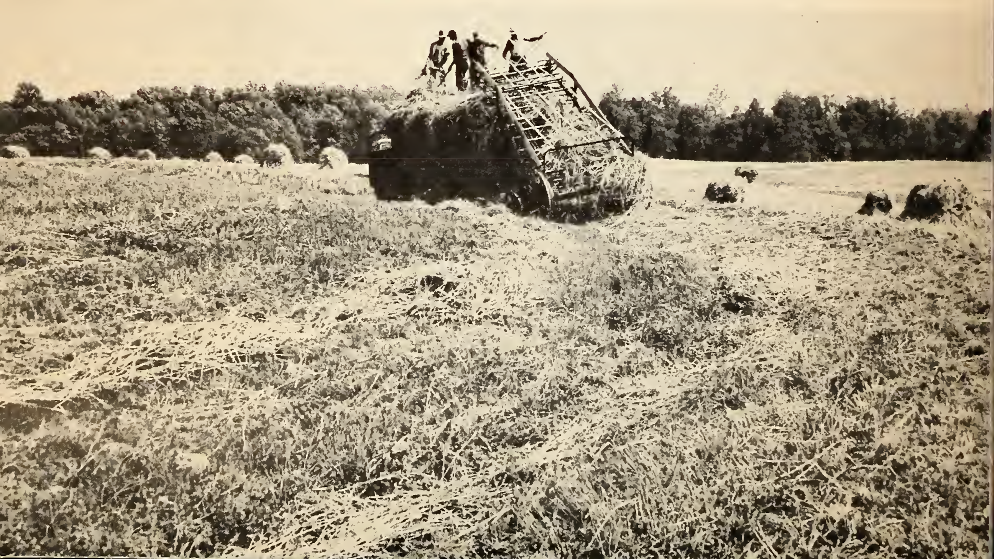
Hay loader working along terrace channel.



The curved rows on a terraced field are easy to farm with the two-row cultivator.

It is best not to straddle terraces with earth-tillage tools.